



General	185
Cautions	185
Climatology	186
Government	186
Navigational Information	188
Routes	188
Seas	188

General

The South Atlantic Ocean is bounded on the E by Africa, on the S by Antarctica, and on the W by South America. Its SE limit is considered to be the meridian of 20°00'E extending between Cape Agulhas and the Antarctic Continent. Its SW limit is considered to be the meridian of Cape Horn (67°16'W.) extending between Tierra del Fuego and the Antarctic Continent. The N limit is formed by the Equator and the NE limit by the SW border of the Gulf of Guinea., which extends from Cape Palmas, in Liberia, to **Cape Lopez** (0°38'S., 8°42'E.).

The Mid-Atlantic Ridge, an immense median mountain range, is the most outstanding feature of the ocean floor. It extends throughout the length of the Atlantic Ocean, claiming the center third of the sea bed and reaching 1,000 miles in width. A central valley, 900m deep, cuts into the crest of the ridge and extends its full length. This valley is intersected at nearly right angles by deep fissures which stretch from continent to continent. In some areas these fracture zones provide conduits for the flow of the deep waters from basin to basin. The area of the Mid-Atlantic Ridge includes the volcanic islands of Ascension, St. Helena, Tristan da Cunha, Gough, and Bouvetoya.

The Walvis Ridge extends in a SW direction from the African coast, in the vicinity of **Cape Frio** (18°26'S., 12°00'E.), to join the Mid-Atlantic Ridge in the latitude of

Tristan da Cunha. Several banks lie along this ridge including **Valdivia Bank** (25°55'S., 5°30'E.), which has a least reported depth of 23m, and Wust Seamount, with a reported depth of 22m. Another ridge, the Biafra Ridge, extends SW from the Bay of Biafra. The Angola Basin, with depths of over 5,000m, lies between Walvis Ridge and the Biafra Ridge. It possesses a generally flat and featureless bottom, except in the N part, where there are a series of seamounts with minimum depths of about 77m.

Cautions

Abnormal Refraction

Extraordinary refraction occurs at times near the coast, especially near the shores of SW Africa, which may be sufficient to produce mirages. This refraction is likely to cause errors when taking sights.

Kelp

Vessels should not pass over kelp, as it is always a sign of danger unless the spot where it grows has been carefully sounded. The least depth will usually be found within a clear spot in the middle of a thick patch of fixed kelp. Live kelp usually indicates depths of less than 20m.

Oil rigs

Oil exploration and production rigs, usually exhibiting lights, may be encountered off the West African coast, inside the 200m curve. Anchors, sometimes buoyed, are placed a considerable distance from rigs and should be given a wide berth.

Fishing

Numerous fishing vessels may be encountered year round off the coast of West Africa. In addition, vessels should navigate

with caution when within 3 miles of the shore on account of the existence of small fishing craft. These boats may be anchored or drifting with unlit bottom gear, crayfish traps, marker buoys, or numerous recovery lines.

Piracy

The security of vessels off the West African coast and at some ports is a serious problem. Numerous attacks by gangs of thieves, some of whom were armed, have occurred. These attacks generally took place in the outer roadsteads, but some were carried out on vessels berthed alongside, anchored in inner harbors, or at sea. In addition to the loss of property and injury to crew members, the thieves used naked lights for illumination which created a serious fire risk.

Vessels are further cautioned to be especially alert for pirates in the waters off Cameroon, Democratic Republic of Congo (Zaire), and the island of Bioko (Equatorial Guinea).

ODAS

The term Ocean Data Acquisition System (ODAS) covers a wide range of devices for collecting weather and oceanographic data. However, the devices of most concern to vessels consist of buoy systems which support instruments. These buoy systems may be expected to become more numerous each year and may be found in most oceans.

The buoy systems vary considerably in size and are either moored or free-floating. As far as possible, positions of the former will always be widely promulgated, and, if considered to be of a permanent enough nature, will be charted. In both types, the instruments may be either in the float or attached at any depth beneath it. The buoys are colored yellow and marked ODAS with an identification number. The moored buoys usually display a yellow light, showing a group of five flashes every 20 seconds. ODAS may be encountered in unexpected areas and often in deep water where navigational buoys would not be found. It should be noted that valuable instruments are often suspended beneath these systems or attached to the mooring lines. In some cases, the moorings have been cut loose beneath the buoy by unauthorized persons, with the consequent loss of the most valuable part of the system. The moored buoys may be up to 7.5m in diameter and 2 to 3m in height. The free-floating buoys are usually much smaller, 2m wide, and do not display a light.

Banks and Seamounts

The Cape Rise consists of a series of isolated seamounts and plateaus extending from Protea Seamount, about 150 miles SW of Cape Agulhas, to Andre Seamount, located about 600 miles further SW. The Cape Basin is bounded by the Walvis Ridge, to the NW, and Cape Rise, to the SE and S. The floor of the basin is somewhat irregular in depth. Vema Seamount, with a least depth of 11m, lies about 400 miles WSW of the mouth of the Orange River.

The deep sea bottom normally consists of inorganic red clay or the organic oozes that have been derived from decayed pelagic and benthic organisms.

The continental shelf lying off the W coast of South Africa is generally very narrow, with long stretches being less than 50 miles in width. This shelf disappears between 13°S and 16°S. At the mouths of the Congo River and the Orange River and off Walvis Bay, the shelf has widths of 70 to 100 miles. A sandy

bottom predominates along the shelf, often occurring over inshore rocks, while mud is dominant beyond the shelf. The Congo Submarine Canyon crosses the entire shelf, the sediment being muddy in the vicinity of the mouth of the Congo River.

The continental shelf lying along the E coast of South America extends to a maximum width of 270 miles in the vicinity of the **Golfo de San Jorge** (46°00'S., 65°30'W.). To the N, the shelf decreases in width and reaches a minimum of 6 miles off **Salvador** (12°58'S., 38°30'W.). It increases again to a width of 150 miles off the mouth of the Amazon River.

There are numerous off-lying islands, banks, and seamounts along the E coast of South America. **Penedos de Sao Pedro e Sao Paulo** (0°55'N., 29°21'W.), an isolated group of rocks, lies on the SE most of a chain of three seamounts which extend 230 miles NW. This group is also the SW most of a chain of four seamounts that extend 320 miles NE.

Arquipelago de Fernando de Noronha (3°52'S., 32°24'W.) lies at the end of a chain of banks and seamounts, which includes Atol das Rocas. This chain extends 200 miles NE from Cabo de Sao Roque, the NE extremity of the continent.

Numerous banks and dangers, including **Arquipelago dos Abrolhos** (17°58'S., 38°42'W.), extend up to 210 miles offshore between 15°S and 22°S. These dangers culminate in a chain of banks and seamounts extending over 600 miles E and terminating in **Ilhas Martin Vaz** (20°31'S., 28°51'W.).

The Bromley Plateau is a wide area with depths of less than 2,000m. It has a minimum depth of 598m and lies 500 to 700 miles SE of **Cabo Frio** (23°01'S., 42°00'W.).

Climatology

As the climate of the land depends upon its proximity to the ocean, so is the ocean's climate regulated by land distribution. Since the Southern Hemisphere lacks the large land masses of the Northern Hemisphere, many differences occur in the climate of the oceans.

In the South Atlantic Ocean, the result is less variability in climate, both seasonally and latitudinally, than its North Atlantic counterpart. With no land protection from colder high-latitude seas, the South Atlantic Ocean is generally colder, particularly to the S of 30°. However, Antarctica is the sole source of frigid air and the surrounding oceans quickly modify any outbreaks before they reach the lower latitudes. The lack of land also allows low-pressure systems to travel a circumpolar route S of 50°S. The seasons in the Southern Hemisphere are the reverse of those in the Northern Hemisphere.

Government

Dependent Island Groups

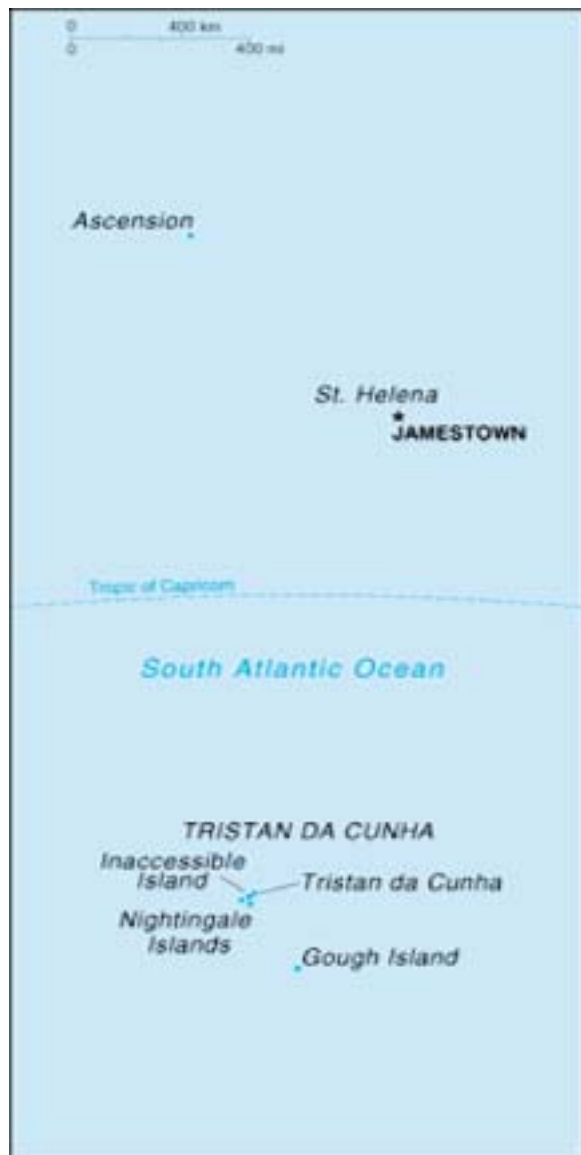
Saint Helena

Saint Helena (15°56'S., 5°42'W.) lies 1,200 miles from the coast of West Africa and is a dependency of the United Kingdom.

The island is of volcanic origin and has an area of 47 square miles. From a distance, it resembles a high pyramidal-shaped fortress rising abruptly from the sea. A line of precipitous and almost inaccessible cliffs, intersected by chasms, fronts the



Flag of Saint Helena



shores. The island is divided into two unequal parts by a ridge of mountains from 600 to 820m high.

The island, which was the place of exile and first burial site of Napoleon Bonaparte, harbors at least 40 species of plants unknown anywhere else in the world. Numerous small fish, about 15cm long, swim around anchored vessels in large

schools. They are known locally as "Black Fish" and eat anything thrown into the water within seconds. The fish will only attack humans if they have an open cut or wound letting blood into the water, but caution should be exercised.

The capital is Jamestown. The island is administered by a Governor, assisted by a Legislative Council, which oversees the various government departments, and an Executive Council.

The Time Zone description is ZULU (GMT). Daylight Savings Time is not observed.

The climate is mild with little variation.

Ascension Island, the Tristan da Cunha group, and Gough Island are dependencies of Saint Helena.

Ascension Island

Ascension Island is of volcanic origin and lies about 700 miles NW of Saint Helena. It has an area of about 34 square miles and most of the surface is barren, rocky, and almost destitute of vegetation. Green Mountain, 857m highest, forms the summit of the island and is surrounded by numerous craggy peaks. The shores are fronted in many places by white sandy beaches; the sand being composed of shell and coral.

The island is noted for sea turtles, feral donkeys, and rabbits.

The island is a dependency of Saint Helena; an Administrator resides at Georgetown, the main settlement. Visitors are not allowed to land on the island without permission of the Administrator.

The island is the location of an important telecommunications center. In addition, the Royal Air Force and the United States Air Force have small military bases on the island.

The Time Zone description is ZULU (GMT). Daylight Savings Time is not observed.

Tristan da Cunha Group

Tristan Island is the largest of a group of five islands lying 1,320 miles SW of Saint Helena, about halfway between the Cape of Good Hope and South America. Inaccessible Island, the second largest, lies 18 miles SW of Tristan Island. Nightingale, Middle, and Stoltenhoff Islands lie close together, 17 miles SSW of Tristan Island.

Tristan Island consists of a volcano, 2,060m high, and its coast is fronted by a line of inaccessible cliffs, 300 to 610m high. The settlement of Edinburgh is situated on the largest of the lowland strips, near the NW extremity of the island.

In 1961, the volcano, which was believed to be extinct, erupted unexpectedly. The entire population of the island was evacuated and settled temporarily in the United Kingdom, almost all returning in 1963.

The island group is a dependency of Saint Helena and is managed by an Administrator and an Island Council.

The Time Zone description is ZULU (GMT). Daylight Savings Time is not observed.

Gough Island

Gough Island, a dependency of Saint Helena, lies about 230 miles SSE of Tristan da Cunha. This island, which is about 7 miles long and 4.3 miles wide, is of volcanic origin and wooded. Edinburgh Peak, 910m high, is the summit and rises from a central plateau bordered by a series of deep valleys and craggy ridges. The coast of the island is fronted by narrow

beaches backed by cliffs, 61 to 457m high. Waterfalls cascade over the cliffs in numerous places.

A meteorological and scientific station, manned by South African personnel, is situated on the island and may be contacted by VHF. The island has been declared a nature reserve and visitors are not allowed without permission of the Administrator of Tristan da Cunha.

The Time Zone description is ZULU (GMT). Daylight Savings Time is not observed.

Bouvetoya

Bouvetoya, also known as Bouvet Island, is a dependency of Norway. This island lies 1,360 miles SW of the Cape of Good Hope and 997 miles SE of Gough Island. It is uninhabited and the most isolated piece of land on the earth's surface.

Bouvetoya has an area of about 19 square miles and consists of a single volcanic cone with a wide indented crater. Olav Peak, 780m high, stands at the center of the island. The slopes of the central cone terminate on all sides in precipitous cliffs or glaciers, which descend abruptly to the sea. The E side of the island is entirely covered with an ice sheet. The N and W sides of the island are comparatively free from ice, except for isolated glaciers, but are much steeper than the S and E sides. Bouvetoya lies in the path of the strongest W winds and thick clouds usually obscure its highest elevations. Snow is frequent and temperatures rarely exceed 2°C in the summer, averaging 1.5°C in the winter.

Navigational Information

Electronic Navigation and Communication

For information concerning electronic navigation and communication, see [Indian Ocean—Navigational Information](#).

Routes

Routes between South American ports situated N of Rio de La Plata and ports on the African coast situated N of 25°S should be by great circle in both directions. A great circle track is also recommended in either direction between the port of Recife (or Salvador) and the Cape of Good Hope. Otherwise, vessels proceeding E should follow a great circle track while those proceeding W should normally proceed by rhumb line so as to avoid the strength of the South Atlantic Current and the Prevailing Westerlies. Mid-ocean transits to the S of 42°S should be avoided in either direction.

Vessels transiting the South Atlantic Ocean should be cautioned that the extreme limit of iceberg migration is about 36°S near Cape Agulhas and 39°S near Tristan da Cunha. This limit extends to within 200 miles of the mouth of the Rio de La Plata.

Seas

Adjacent Waters

Adjacent waters include the Gulf of Guinea, the Strait of Magellan, and the Rio de la Plata.

The Gulf of Guinea

The Gulf of Guinea is that part of the South Atlantic Ocean lying E of a line extending SE from Cape Palmas, in Liberia, to

Cape Lopez, in Gabon. In the upper part of this gulf between Ghana and the Niger delta, a broad indentation forms the Bight of Benin. In the NE corner of the gulf, a line of volcanic islands extends NE from Oagalu to Bioko (Macias Nguema Biyogo) and forms the Bight of Biafra. The warm Guinea Current flows E near the coast and swings around in this latter bight to join the South Equatorial Current, which is composed mainly of cooler water from the Benguela Current moving up from the S.

The Strait of Magellan

The Strait of Magellan separates Archipelago de Tierra del Fuego from the Patagonian mainland and Archipelago Reina Adelaide. This strait was named after its discoverer, Hernando de Magallanes, in 1520.

The strait is entered at the E end between **Punta Dungeness** (52°24'S., 68°25'W.) and Cabo Espiritu Santo, 16.5 miles SW. The W entrance lies between **Cabo Victoria** (52°17'S., 74°54'W.) and Cabo Pilar, 28 miles SSE. The distance between these entrances is about 310 miles.

Vessels must exercise caution when transiting the strait in either direction because during bad weather, which is most likely to be the case, the navigation is particularly difficult and dangerous. Generally, the anchorages are foul and rocky throughout the strait. In addition, the strait offers problems concerning both local wind directions and speeds. In the many countless passages, the wind usually follows the run of the channel, having only two possible directions in any one location. This is particularly true within the narrow passages lying W of Cape Froward.

Sustained gales are seldom encountered except in the widest passages. The area near Punta Arenas experiences gales on 10 days annually. This frequency increases to the E to Punta Dungeness, where they occur on 35 days per year. The funneling effect of the narrow passages and surrounding mountains to the W of Punta Arenas causes violent, unpredictable squalls known as williwaws. These williwaws depend largely upon the existence of strong winds at sea or aloft. As the wind strikes the rugged mountains of the Chilean Archipelago, eddies of varying duration and intensity develop. The result is squalls, with wind gusts sometimes exceeding 100 knots, blowing from varying directions. The occurrence of one or more of these squalls from one direction is no assurance that the next one might not come from an entirely different direction. Even in a sheltered inlet, where the general slope of the land is fairly regular, the wind often changes speed and direction from minute to the next. These squalls are even more dangerous in the presence of rain, sleet, or snow and can seriously impair visibility. Since williwaws are extremely local, an open passage lying a few miles from a narrow one may afford much better protection.

The rugged, sparsely populated S coast of Chile is a stormy and windy region where, in many places, trees are stunted and indicate the direction of the prevailing wind by their distorted shapes, much like trees high on a mountain which lean with the prevailing wind.

The area near the coast is under the influence of migratory cyclones as well as the South Pacific Anticyclone, resulting in various wind directions and high wind speeds. However, W winds still prevail, occurring about 50 percent of the time in all seasons. Winds from NW through SW occur nearly 75 percent of the time. Average wind speeds increase toward the pole. The

exposed coastal regions located to the S of the Gulf of Penas experience average wind speeds of 14 to 18 knots all year round. Northward to the Gulf of Corcovado, the average annual wind speed decreases to between 8 knots and 12 knots.

The Rio de La Plata

The Rio de La Plata is a broad estuary comprising an enormous drainage basin which includes the Paraguay River, the Parana River, and the Uruguay River, as well as numerous small streams. The estuary is entered between **Punta del Este, Uruguay** (34°58'S., 54°57'W.) and Cabo San Antonio,

Argentina, located 120 miles SW. It extends in a WNW direction for about 140 miles.

Despite the enormous amount of water discharged into the ocean, the Rio de la Plata is relatively shallow. Seasonal rates of flow, winds, and tides have a considerable effect on the depths. The expanse of the low plain, known as the pampas, on the S side permits violent winds, called pamperos, to build up and whip the waters of the estuary into violent storms at certain times of the year. A large portion of the river cannot be used except by very shallow draft vessels. Navigation in the lower reaches is only maintained by constant dredging.